I/S: A JOURNAL OF LAW AND POLICY FOR THE INFORMATION SOCIETY

An Analytic Challenge: Discrimination Theory in the Age of Predictive Analytics

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I. INTRODUCTION

Growing reliance on big data and predictive analytics[1] throughout society is bringing with it changes in an abundance of fields and will soon impact all walks of life. Specifically, automated models which analyze vast amounts of personal data will play a central role in the realm of decision making. At various junctures, society is introducing fully automated decision-making measures in both the private and public sectors, and additional models will be sure to follow. For instance, algorithms are used to establish the level of credit applicants will receive and the interest they will be charged.[2] We are also witnessing far more instances in which algorithms merely provide the human decision-maker with advice and recommendations. For example, an algorithm is used to furnish judges with recommendations as to the extent of the sentences convicted felons must serve.[3]

The power of "mere" automated recommendations must not be underestimated, even at this early juncture. Automated advice will often be followed by humans, given the powerful allure of computerized decisions and their appearance of precision and flawlessness, as opposed to human fallibility. Arguably, in professional settings where deciders might be held accountable after the fact, humans will follow automated advice to an even greater extent. This is due to the deciders' concern with being held liable for errors resulting from their reliance on personal discretion. Furthermore, reliance on such automated recommendation might still prove to be the rational move for the decider, even if she speculates that the automated recommendation resulted from or will lead to an error. When doing so, the responsibility for deferring to this erroneous output could be shirked, as the decider could claim, after the fact, that the reason for the error "was not me; it was the machine's fault."

This Essay addresses the impact of automated recommendations and possible policy responses to the changes they bring about, while focusing on the specific subtopics of anti-discrimination theory and policy. On the most basic level, the discussion will focus on automated decisions that involve instances in which the lives of individuals are

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[1] *See* Dennis Hirsch, *Predictive Analytics Law and Policy: A New Field Emerges*, 14 I/S: J.L. & POL'Y FOR INFO. SOC'Y 1, 1 (2018).

[2] Nizan Geslevich Packin & Yafit Lev-Aretz, *On Social Credit and the Right to Be Unnetworked*, COLUM. BUS. L. REV. 339, 357-65 (2016).

[3] State v. Loomis, 2016 WI 68, ¶ 92, 881 N.W.2d 749 (Wis. 2016).

directly and substantially impacted[4] (e.g. credit, employment, insurance, the judiciary, and the military). This is often the situation in instances involving *allocation*[5] of goods and services.

Predictive modeling has generated a rich discussion as to the various benefits and disadvantages of these measures. Given the importance of data driven processes, they are closely scrutinized from various perspectives and examined as to whether they generate outcomes which prove efficient and fair. An additional dimension unfolding in the scholarship addresses whether the processes prove to be respectful of the human rights of those affected by the allocation. Regarding these perspectives, predictive modeling carries the promise of providing several advantages. Data analytics can enhance efficiency by quickly generating innovative processes, leading to relatively accurate decisions while accounting for all relevant factors. Furthermore, algorithmic decisions might promote fairness by enabling judgments which are detached from the ills of human decisions and cognition, such as predictable and systematic biases which often have an adverse effect on minorities.[6] In terms of basic and human rights, equality and even privacy (for those finding analysis via machine to be less intrusive than human scrutiny)[7] might also be enhanced by the growing use of these measures.

However, algorithmic-driven decisions feature a variety of disadvantages. They are at times error-ridden and subject to manipulation, leading to inefficient and unfair outcomes.[8] They are often opaque, generating processes locked into "black boxes." When this is the case, it is very difficult for those affected by the process to

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[4] See Regulation 2016/679 of the European Parliament and of the Council of 27 April 2016 on the Protection of Natural Persons with Regard to the Processing of Personal Data and on the Free Movement of Such Data, and Repealing Directive 95/46/EC, art. 22, 2016 O.J. (L 119) 1, 46 [hereinafter General Data Protection Regulation], for a similar regulatory focus.

[5] *See generally* Ronen Perry & Tal Z. Zarsky, *Queues in Law*, 99 IOWA L. REV. 1595, 1595-96 (2014) (discussing various allocative settings and tools for engaging in such allocation).

[6] Tal Z. Zarsky, *Automated Prediction: Perception, Law and Policy*, 15(9) COMM. OF THE ACM 33, 35 (2012).

[7] *See* Tal Z. Zarsky, *Governmental Data Mining and Its Alternatives*, 116 PENN. ST. L. REV. 285, 320 (2011); Mathew Tokson, *Automation and the Fourth Amendment*, 96 IOWA L. REV. 581, 602-09 (2011).

[8] *See* CATHY O'NEIL, WEAPONS OF MATH DESTRUCTION 124, 155 (2016).

properly understand it, thus compromising, among other things, their rights of due process (when such rights exist).[9] The use of predictive analytics has also raised concerns of privacy violations and disrespect to one's autonomy, as well as the fear that it enables sophisticated forms of manipulation.[10] Finally, the use of algorithmic processes has raised concerns that they generate unacceptable, and at times even novel, forms of *discrimination*.

The study of algorithmic-based and algorithmic-driven discrimination has drawn substantial interest in the last few years. The discussion crosses over several disciplines and examines a variety of processes. Computer scientists have studied whether such discrimination is unfolding and how it might be proven.[11] These studies noted the challenge of identifying such discrimination and its cause, and even offered various remedies. Legal scholars[12] and others in the social sciences have also joined the discussion while setting forth various contributions. Some of these issues were already echoed by policymakers.[13] This Essay will strive to further enrich the growing corpus of work related to predictive analytics addressing the specter of discrimination (while partially relying upon this author's earlier

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[9] *See* FRANK PASQUALE, THE BLACK BOX SOCIETY (2015).

[10] *See* Ryan Calo, *Digital Market Manipulation*, 82 GEO. WASH. L. REV. 995 (2014).

[11] *See* Latanya Sweeney, *Discrimination in Online Ad Delivery*, DATA PRIVACY LAB (Jan. 28, 2013), https://dataprivacylab.org/projects/onlineads/1071-1.pdf [https://perma.cc/5FHX-UUGM]; Hannah Devlin, *Discrimination by Algorithm: Scientists Devise Test to Detect AI Bias*, THE GUARDIAN (Dec. 19, 2016), https://www.theguardian.com/technology/2016/dec/19/discrimination-by-algorithm-scientists-devise-test-to-detect-ai-bias [https://perma.cc/DCJ9-VHGE].

[12] *See* Danielle K. Citron & Frank Pasquale, *The Scored Society: Due Process for Automated Predictions*, 89 WASH. L. REV. 1 (2014); Kate Crawford & Jason Shultz, *Big Data and Due Process: Toward a Framework to Redress Predictive Privacy Harms*, 55 B.C. L. REV. 93, 99 (2014).

[13] Edith Ramirez, FTC Chairwoman, Keynote Address at the Technology Policy Institute Aspen Forum: The Privacy Challenges of Big Data: A View From the Lifeguard's Chair 7–8 (Aug. 19, 2013) (transcript available at http://www.ftc.gov/sites/default/files/documents/public_statements/privacy-challenges-big-data-view-lifeguard%E2%80%99s-chair/130819bigdataaspen.pdf [https://perma.cc/MC7B-EG7P]); Sari Horwitz, *Eric Holder: Basing Sentences on Data Analysis Could Prove Unfair to Minorities*, WASH. POST (Aug. 1, 2014), https://www.washingtonpost.com/world/national-security/us-attorney-general-eric-holder-urges-against-data-analysis-in-criminal-sentencing/2014/08/01/92d0f7ba-1990-11e4-85b6-c1451e622637_story.html [https://perma.cc/2GCL-Z282].

work).[14] It will do so by illuminating several theoretical justifications of anti-discrimination theory and policy, and the way they are challenged by the novel practices arising. In other words, the Essay's central contribution is applying existing theory to novel practices, and by doing so, trying to establish the next mandatory regulatory steps to be taken.

Given the breadth and richness of the theoretical aspects, the analysis will focus on the normative level, leaving the important doctrinal analysis for another day.[15] In *Section II*, this Essay provides the foundations for the discussion, while defining discrimination and its key components. It further provides the basic deontological and consequentialist justifications for anti-discrimination policy. *Section III* moves to apply these definitions and justifications to the age of predictive analytics, while exploring when and how rules prohibiting discriminatory intent and outcomes could be justified, and providing general recommendations (SectionIII.A). Finally (in Section III.B), the analysis explores whether the definition of social groups which must be protected from discriminatory acts should be amended given new social and technological trends.

II. BASICS: DEFINITIONS AND THEORIES

A. *Defining Discrimination*

To properly launch our discussion, let us first further define its scope. For that, I start with the definition of discrimination itself. Discrimination has proved to be an allusive concept which philosophers and legalists struggle to define. In simple language, it applies to drawing a distinction between factors or subjects. Yet in the context of our discussion–that of morality and law– "discrimination" refers to actions that are socially unacceptable, often immoral, and at times illegal. Discrimination must go beyond the broad category of conduct that is arbitrary or generally unfair. Thus, a different, more precise, definition is required.

There are several analytical responses to the challenge of defining discrimination in the normative sense. One broadly accepted definition states that such discrimination must be focused on a specific "social

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[14] *See* Tal Z. Zarsky, *Understanding Discrimination in the Scored Society*, 89 WASH. L. REV. 1375 (2014).

[15] For a similar move and justification for such limitations, see *id.* at 1380.

group," or even a "salient social group." [16] Defining the meaning of such a "group" in this context is a challenge of its own. On the simplest level, it refers to relatively well-defined and accepted groupings within society–such as gender or nationality (and of course even the identification of these groups raises questions as to how they must be defined–issues I set aside at this point). What constitutes such a group is no doubt an open and dynamic question. As such, this definition must currently be expanded to include distinctions related to social status, family structure and physical condition.

In view of the open-ended and potentially broad nature of this definition, many scholars call for further limiting the understanding of discrimination to instances in which the social group is "salient"–a concept which also requires some unpacking.[17] Salience could be understood from at least two perspectives. First, a grouping attribute could be salient to the public in general, or to the "reasonable person."[18] Such salience will be dictated by social trends (which might change over time). It will also be greatly affected by cognitive factors and limitations. Some attributes (e.g. skin color, gender) are easily grasped and considered. Others (such as being left-handed or having a specific blood type) are hidden or complex, and therefore fall outside this definition of salience.

Another way to understand "salience" (and thus define "discrimination") is from the group members' perspectives. A salient social group will be considered as such when membership in the group is an important element in the individual's definition of the self. While similar, this distinction does not fully overlap with the previous one. Clearly, there are instances in which attributes are both important to the individual and are used for social grouping as well–such as religion, nationality, gender and sexual orientation. However, some elements

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[16] Natalie Stoljar, *Intersectionality*, *in* THE ROUTLEDGE HANDBOOK OF THE ETHICS OF DISCRIMINATION 68 (Kasper Lippert-Rasmussen ed., 2017) (citing Andrew Altman and others); Peter Vallentyne, *Rights*, *in* THE ROUTLEDGE HANDBOOK OF THE ETHICS OF DISCRIMINATION 132 (Kasper Lippert-Rasmussen ed., 2017). On the other hand, Stoljar notes scholars that find that this is not a necessary prerequisite and that discrimination could also be considered differentiating on the basis of hair or eye color.

[17] Lippert-Rasmussen refers to instances in which membership is important as it structures social interactions. This definition is ambiguous as well and will benefit from the additional analysis in the text that follows. *See* Kasper Lippert-Rasmussen, *Introduction*, *in* THE ROUTLEDGE HANDBOOK OF THE ETHICS OF DISCRIMINATION 2 (Kasper Lippert-Rasmussen ed., 2017).

[18] *See* Frej Klem Thomsen, *Direct Discrimination*, *in* THE ROUTLEDGE HANDBOOK OF THE ETHICS OF DISCRIMINATION 25-26 (Kasper Lippert-Rasmussen ed., 2017).

might prove central to the individual but will not be generally used for social grouping, such as attractiveness or affiliation with sport teams.

In addition to the noted criterion, the definition of discrimination is further narrowed by some scholars stating that the social group in question must be one that has been subjected to injustice and even subordination in the past.[19] Therefore, race and gender easily fit within this definition, while other categories such as age or obesity set forth difficult questions. Other commentators go even further to explain a finding of "discrimination" requires a power imbalance between the decider and those subjected to the decision, rendering the discussion context-specific (as further detailed below).[20] The extent to which the specific group is insulated can also be considered as an important factor.

For most of this Essay and for the sake of simplicity, the analysis will focus on the "classic" forms of social groups which receive the attention of both law and scholarship–minorities defined by race. The argument can, however, quite easily be applied to other forms of "protected groups" as classified by religion, gender or sexual orientation. Section 2.3 below will briefly step outside of this analytic comfort zone and examine the applicability of the noted theories to other forms of groups.

Prior to concluding this segment of the discussion, it is important to note that defining an action as discriminatory carries with it substantial consequences. When found to be discriminatory, actions are often prohibited by public and private entities alike (with the exclusion of personal activities within one's closest inner circle).[21] Furthermore, those engaging in such activities are often sanctioned by law and castigated by society. Thus, defining discrimination must be done with care, as the consequences of over- or under-exclusiveness are dire. Defining discrimination too narrowly might allow unacceptable forms of conduct to slip between the regulatory cracks. In addition, narrow definitions might lack the flexibility of capturing new forms of unacceptable discriminatory conduct. On the other hand, the definition

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[19] Patrick Shin, *Race*, *in* THE ROUTLEDGE HANDBOOK OF THE ETHICS OF DISCRIMINATION 203 (Kasper Lippert-Rasmussen ed., 2017). *See also* DEBORAH HELLMAN, WHEN IS DISCRIMINATION WRONG? 37 (2011).

[20] Deborah Hellman, *Meaning*, *in* THE ROUTLEDGE HANDBOOK OF THE ETHICS OF DISCRIMINATION 103-04 (Kasper Lippert-Rasmussen ed., 2017).

[21] *But see* Hugh Collins, *Private Life*, *in* THE ROUTLEDGE HANDBOOK OF THE ETHICS OF DISCRIMINATION 361 (Kasper Lippert-Rasmussen ed., 2017) (explaining that anti-discrimination law is mostly applied to the public sphere).

must not be overbroad. The law must refrain from needlessly interfering with the discretion of private parties conducting their affairs[22] (and to some limited extent provide the state with some discretion as well), and thus possibly curb innovation. Furthermore, defining discrimination too broadly might dilute the crucial core principles of equality and contribute to legitimizing actions society certainly finds objectionable. This will occur when courts and regulators allow for some forms of newly-defined "discrimination" to transpire, given the internal balancing all anti-discrimination rules entail, and with that, allow the public to believe that other core notions of discrimination could be compromised and eventually allowed as well. For these reasons, the anti-discrimination rules decided upon must be drafted and implemented with precision and sufficient theoretical backing–a task we turn to now.

B. *Why is Discrimination Wrong, and of Which Form?*

In liberal societies, many forms of discriminatory practices (even those found acceptable not long ago) generate a strong visceral sense of repulsion. Yet it is important to articulate what we find unacceptable in discriminatory conduct or outcomes, and why. The results of such an inquiry will prove essential when unpacking questions arising in novel contexts, such as predictive analytics and data driven processes.

Very broadly speaking, it is helpful to set forth two sets of arguments to justify anti-discrimination policy: deontological, or expressive, arguments which focus on the intention of the actor, and consequentialist arguments focusing on the outcomes and wrongs of the discriminatory practice.[23] A deontological justification will focus on actions which are driven by the actor's intention to treat one group differently (for a variety of reasons), without attaching substantial concern as to whether the specific group ends up worse off due to these actions. On the other hand, a consequentialist justification will be motivated by concerns regarding the discriminatory outcomes and the fact that one group received inferior treatment or was allocated less or

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[22] See *id.* for a discussion of the shift of anti-discrimination laws into the private sphere.

[23] *See* Larry Alexander, *What Makes Wrongful Discrimination Wrong? Biases, Preferences, Stereotypes, and Proxies*, 141 U. PA. L. REV. 149, 154 (1992) (noting this distinction as the basis for anti-discrimination considerations). For a general attempt to bridge these two concepts, see EYAL ZAMIR & BARAK MEDINA, LAW, ECONOMICS, AND MORALITY (2010).

lesser goods, rather than examining the intentions which led to this result.

This dichotomy will dominate the following discussion though it is not without its shortcomings, as the noted distinction is somewhat messy. For instance, according to some theories the extent of the intent has an impact on the actual harms the affected individual suffers and therefore this deontological theory relies on some outcome-based justifications.[24] Nonetheless, the elegance of this taxonomy facilitates the analysis quite effectively, and therefore, the noted inaccuracies could be forgiven.

The *deontological* arguments rely on several forms of justifications and can also be referred to as those concerned with "disparate intent." They are of greatest force when referring to the explicit actions of public entities and the government, which are not the focus of this current discussion. However, deontological arguments are nonetheless still relevant to the actions of private parties–especially those in a position of power and influence. On the most basic level, it is broadly argued that judging people as having inferior moral worth is intrinsically wrong,[25] and that actions based on such judgment are unfair.[26] Note however, that often (and especially in the context of predictive analytics) discriminatory intent need not reflect bigotry. Rather, it might result from the willingness to cater to discriminatory preferences of others, or an attempt to abuse previously noted vulnerabilities of the relevant social groups. These instances are still considered to constitute unfair discrimination, yet other intent-based justifications are required to explain why.

Another popular deontological theory focuses on the *demeaning* nature of such discriminatory intentions and the actions that follow. This notion has two aspects:[27] one subjective in the mind of the decider,

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[24] *See, e.g.*, Hellman, *supra* note 20, at 105 (arguing that discrimination is demeaning- an outcome affected by intention).

[25] *See* Alexander, *supra* note 23, at 159.

[26] *See* FREDERICK SCHAUER, PROFILES, PROBABILITIES AND STEREOTYPES, 203-04 (2003).

[27] Erin Beeghly, *Respect, in* THE ROUTLEDGE HANDBOOK OF THE ETHICS OF DISCRIMINATION 84-85 (Kasper Lippert-Rasmussen ed. 2017). She also notes a third notion of "deliberative disrespect" forwarded by Benjamin Eidelman. According to this theory, disrespect follows from not considering the possible arguments the person discriminated against can set forth. While this interesting argument might still stand in the algorithmic setting, it might be too far-fetched to subject deciding individuals and entities to such a normative requirement.

and one objective. The former aspect refers to the unacceptable nature of the allocator's conduct. The latter aspect pertains to the actual actions and policies implemented and whether they are perceived as demeaning by the affected parties, as well as the public in general. Here, context will play a central role and establishing these theoretical elements in practice will prove challenging.[28]

A final deontological justification states that discrimination is wrong given the fact that it resulted from policies which treat individuals as mere segments within broader groups,[29] and in that way, undermines the individual's freedom.[30] Note this justification suffers from a severe flaw,[31] as individuals are *always* considered as part of a group when subjected to decisions (especially in the context of allocations). This is because all human decisions rely on some form of generalization–the practice of placing an individual or an event within a broader group. For instance, considering the plausibility of specific facts, claims and actions regarding one person requires comparing that specific individual's qualities and attributes with those of other individuals and phenomena the decider encountered in the past.

Beyond the deontological aspects, consequentialist arguments focus on the unique harm of the discriminatory conduct or on the "disparate impact". On the most basic level, the prohibition and limitation of discrimination is justified given the fact that it leads to inequality among the distinguished groups and might prove to be a strong proxy for discriminatory intent.[32] Yet to be considered discriminatory, the outcome often requires something more. Indeed, the law has singled out only several specific contexts in which disparate

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[28] Ronen Avraham, *Insurance*, *in* THE ROUTLEDGE HANDBOOK OF THE ETHICS OF DISCRIMINATION 340 (Kasper Lippert-Rasmussen ed., 2017) (musing whether a minor hike in pension payments should be considered demeaning).

[29] *See* Sarah Goff, *Discrimination in the Job Market*, *in* THE ROUTLEDGE HANDBOOK OF THE ETHICS OF DISCRIMINATION 307-08 (Kasper Lippert-Rasmussen ed., 2017).

[30] *See* Julie Suk, *Affirmative Action*, *in* THE ROUTLEDGE HANDBOOK OF THE ETHICS OF DISCRIMINATION 397 (Kasper Lippert-Rasmussen ed., 2017) (referring to the work of Moreau and Eidelson).

[31] *See* SCHAUER, *supra* note 26, at 86-87.

[32] Larry Alexander & Kevin Cole, *Discrimination by Proxy*, 14 CONST. COMMENT. 453, 456 (1997).

impact is prohibited,[33] and from these instances various justifications can be derived.

Discrimination is deemed unlawful and intervention is justified when it promotes negative stereotypes regarding specific social groups.[34] Such stereotypes would most likely unfold and persist when the discriminated group was subjected to prejudice in the past, and thus, these stereotypes are still salient in society. The troubles of spreading negative stereotypes also unfold when such stereotyping is easily and quickly derived from the discriminatory practice. This, in turn, is a result of the noted cognitive feature of the human mind.[35] For example, stereotyping will most likely follow when a specific racial factor is used, or when a clear outcome of racial separation and segregation publicly unfolds. Furthermore, a discriminatory outcome should be prohibited when it might lead to subordination[36] and seclusion of specific social groups.[37] Such outcomes will unfold when the allocated resources are important and contribute to the structuring of society – for instance, decisions and allocations related to employment and housing.[38]

To conclude, the justifications for discrimination are complex and vague rather than simple.[39] It is, therefore, no surprise that while discrimination is a general term, the complexity of anti-discrimination theory requires context-specific approaches. For instance, the contexts of employment, housing, and credit were singled out as those that

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[33] For a review, see Zarsky, *supra* note 14, at 1398.

[34] Alexander & Cole, *supra* note 33, at 457.

[35] Thus, the problem with stereotypes indeed begins when they are externalized – or begin reproducing themselves throughout the world. *See* Andrew Koppelman, *Justice for Large Earlobes! A Comment on Richard Arneson's "What Is Wrongful Discrimination?,"* 43 SAN DIEGO L. REV. 809, 813 (2006).

[36] *See* Solon Barocas & Andrew D. Selbst, *Big Data's Disparate Impact*, 104 CALIF. L. REV. 671, 724 (2016).

[37] SCHAUER, *supra* note 26, at 189.

[38] Collins, *supra* note 21, at 365.

[39] Alexander, *supra* note 23.

require specific rules and approaches, while others provide less restrictive interventions.[40]

III. THE "ANALYTIC" CHALLENGE: RECONSIDERING DISCRIMINATION THEORY

The noted theoretical justifications do a reasonable job explaining and justifying why discriminatory practices of the past are unacceptable. Adapting them to the algorithmic age requires some tinkering. Before explaining why that is and how it could be done, consider two examples to guide us through the following discussion (which are mostly premised on actual events and practices):

Example A: FinBank Inc. is a subsidiary of a large commercial bank which has chosen to introduce novel methods for providing credit and operates in a competitive environment. One such credit allocation model structures a credit score on the basis of the meta-data their costumers' cell phone operators provide them with (after the customers gave their explicit consent), which includes location data, as well as insights to the users' social network. An ex post analysis of the outcomes of this credit allocation model showed that the algorithm used recommended limiting credit to individuals who frequent specific geographical areas – zones mostly populated by minorities. In addition, further analysis found that the cell phone meta-data was far richer for affluent users who had extensive data plans. This practice led to tainted results indicating better credit recommendations for these affluent users.

Example B: AllLife is a small insurance company which began using predictive analytics to tailor premium pricing to customers for their health and life insurance products. In doing so, they apply algorithms which strive to identify risk factors that lead to a shorter life span and health complications, using a data driven process. In other words, algorithms work through datasets to set up predictive models which are later applied to price the premiums of new customers. These datasets were closely inspected to assure they properly represent the entire corpus of current and prospective clients. Nonetheless, an after-the-fact analysis showed that (1) this process led to higher premiums

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[40] For the context of employment, see The Civil Rights Act of 1964, tit. VII, 42 U.S.C. §§ 2000e-2000e-17 (2012); for the context of housing, see The Fair Housing Act, 42 U.S.C. §§ 3601-19; Richard J. Arneson, *What Is Wrongful Discrimination?*, 43 SAN DIEGO L. REV. 775, 778 (2006); for the context of credit, see Packin & Lev-Aretz, *supra* note 2, at 353.

for minorities (2) the process revealed interesting correlations related to other factors such as veganism, or the tendency to take short naps in the afternoon, and health-related outcomes. These lifestyle factors were factored into the predictive analytics decision-making process for premium setting and calculation.

A. *Challenges to the Deontological Arguments – and Quick Responses*

1. *The "Intent" Hook*

Should any of the noted practices detailed in the examples be considered as unacceptable discrimination on the basis of the noted deontological justifications? Before directly addressing this issue, it is first important to re-visit the central notion of "intent". Finding an intentional "hook" to the noted practices is somewhat of a challenge. It is fair to assume that these practices do not feature explicitly blatant discrimination, which is driven by bigotry or prejudice. Therefore, justifications which rely upon intentional consideration of some groups to be of lower moral worth are probably of very limited relevance in these contexts.[41] Furthermore, given the public's distaste for such conduct, very rarely will groups be specifically and intentionally differentiated on the basis of a factor defining a salient social group.

Even though "classic" forms of intent are unlikely to unfold, other, subtler forms of intent are quick to surface. At first, algorithmic designers might subconsciously structure models in a discriminatory manner. While indirect, this form of intent nonetheless discriminates against group members *because* they are members of this group, and therefore, are indeed problematic.[42] Given the limited human intervention in the process, these instances will also prove rare. They might, indeed, unfold, while the analysts make subtle decisions as to whether specific correlations and findings should be weeded out and considered as a mere fluke or error, or applied to the final algorithm. Therefore, audit logs must document the process of structuring and running the predictive algorithms. When discriminatory outputs are found, these logs must be examined for evidence of such human-driven biases and their outcomes.

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[41] RICHARD FORD, THE RACE CARD 180 (2008). *But see* Barocas & Selbst, *supra* note 36, at 692 (noting the notion of "masking").

[42] *See* Zarsky, *supra* note 14, at 1391. For additional sources on subconscious discrimination, see Melissa Hart, *Subjective Decisionmaking and Unconscious Discrimination*, 56 ALA. L. REV. 741, 741 (2005).

Furthermore, discriminatory intent will most likely be reflected in three specific manifestations which must now be considered and accounted for: (1) recklessly distinguishing between groups while applying factors which are clearly proxies for protected groups; (2) recklessly relying on problematic and tainted sources; and (3) recklessly relying on automated decision-making systems, which mimic prior human behavior known to be discriminatory and biased. Recognizing these aspects pushes the boundaries of culpability, yet is necessary to consider, given technological changes.

The noted *Example A* can further demonstrate and explain these novel forms of potential intent. Here, FinBank did *not* show any clear intention to discriminate, nor is there any indication of subconscious intentions. However, several forms of culpability could nonetheless be identified. FinBank applied an algorithm, that singled out a specific geographical area which proved to be a proxy for race. By neglecting to examine whether the geographical areas used were indeed such a proxy, FinBank committed a culpable omission. Indeed, geographical areas have often been found to be strongly correlated with race. Therefore, neglecting to examine the nature of the geographical zone selected for differentiation is normatively unacceptable and should fall within "intentional" forms of discrimination.[43] Other situations, such as the use of specific names for distinguishing among recipients in allocation processes, would be suspect as well and their prohibition easily justified under these "intentional" theories.[44]

Furthermore, culpability and thus intent might arise from FinBank's reckless reliance on a tainted dataset which led to discriminatory outcomes. Indeed, predictions can only be as good as the data they rely upon (a notion best encapsulated in the computer science axiom "garbage in – garbage out."[45]). Reckless discrimination might follow from reliance on datasets which systematically over-represent (or underrepresent) negative (or positive) behavioral attributes of a specific social group. In this example, FinBank applied the cell phone metadata without correcting it for predictable biases which might result from the collection process – a culpable omission

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[43] For more on the justifications for prohibiting the use of "blatant proxies," see Zarsky, *supra* note 14, at 1394.

[44] *See* Sweeney, *supra* note 11, at 34.

[45] *Garbage in, Garbage out*, WIKIPEDIA, https://en.wikipedia.org/wiki/Garbage_in,_garbage_out [https://perma.cc/TB94-FFTF].

which results in a new form of intent. If the example here noted were to unfold, the relevant firm could not argue that the standard here set is too high and that it cannot be expected to foresee these complications. This is because similar prediction models and their problems have already been noted in the literature of the credit context.[46] In addition, the systematic errors mentioned have also been discussed in similar settings.[47] Indeed, revelations regarding the fallibility of machine learning[48] and other forms of automated decisions place the onus on the relevant firms to show they have not acted recklessly in these contexts.

A similar argument could be made with regard to the firm's potential reliance on machine learning techniques, which mimic human-based decisions which were known to be discriminatory given past complaints. Neglecting to correct the discriminatory outcomes could, at times, be equated to intentionally applying a discriminatory algorithm, when such actions are to be expected. In this example, FinBank cannot structure a machine learning algorithm which will learn from the practices and decisions of its parent-bank credit officers, if these have been known to systematically and intentionally discriminate against minorities. Recklessly duplicating intentional discriminatory practices of the past should be considered as intentionally discriminatory practices at the present.

2. *Deontological Justifications*

After understanding what forms of intent might prove relevant to predictive analytics environments, it is now the time to establish which forms of discriminatory intent should be considered prohibited and why. The central intent-based justifications for anti-discrimination norms and policy – those stating that it is unacceptable to judge groups to be of a lower moral worth – seem irrelevant to the predictive analytics context as those operating the algorithms most likely do not take such a moral stand. Therefore, we must turn to the next central justification and examine whether the actions noted are demeaning. When doing so, let us assume that the nature of the algorithm's outcome is evidently made public and acknowledged, even though the

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[46] Packin & Lev-Aretz, *supra* note 2, at 359.

[47] Kate Crawford, *The Hidden Biases in Big Data,* HARV. BUS. REV. (Apr. 1, 2013), https://hbr.org/2013/04/the-hidden-biases-in-big-data [https://perma.cc/C7XG-ZXB8].

[48] *See* Sweeney, *supra* note 11, at 34.

process might take place in a "black box." A highly secretive algorithm might arguably not prove demeaning, as its actions and outcomes are unknown. Given the "leaky" nature of the information society and economy, it is, nonetheless, fair to assume that such information will eventually make its way to the public and thus generate the "demeaning" dynamic. This will be especially pronounced in commercial contexts, as discussed in the examples.

Here, it is important to address the noted intricacies of the "demeaning" justification, which has both objective and subjective aspects. In general, demeaning/disrespect-based arguments are analytically weak in algorithmic settings in which the decisions are data driven.[49] The objective aspects are especially unconvincing; one can seriously question whether members of the social group will find the automated processes singling them out demeaning and disrespectful. Arguably, such sentiments best describe feelings individuals have towards other individuals, as opposed to sentiments towards artifacts, such as computers. Of course, and as explained, the so-called automated actions of FinBank have resulted from the actions and omissions of the firm's executives, data analysts, and programmers. However, this deep understanding of the data analytics practices is not most likely shared with the general public. Here, given its general ignorance on this matter, one can speculate that the public will probably *not* feel "insulted" or "demeaned" by the actions of the executives driving the actions addressed in the noted examples. These crucial questions undermine the application of the "demeaning" based justification to this context.

However, the "demeaning" justification might carry more weight when considering its "subjective" aspects. This theoretical element concerns the actual actions and omissions of FinBank's employees – as opposed to how they are perceived. As explained, FinBank certainly could have taken steps to limit the discriminatory outcome. Failing to do so, at least when such steps are obvious and the results of the discrimination are predictable and substantial, should be considered as demeaning and thus justifiably discriminatory.

An additional dimension to remember when considering this justification is the nature and extent of the interaction between the relevant parties. Some scholars state that even an intentional discriminatory act can hardly be considered demeaning if it is a one

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[49] *See* Beeghly, *supra* note 27, at 88 (stating this is true even in the simpler context of "statistical discrimination"). For more on this latter term, see SCHAUER, *supra* note 26, at 117-18.

time or isolated encounter. Other factors noted are the power relationships between the parties. On its face, the relations noted represent power imbalances between mere individuals and large corporations, which provide social and even public-like services to the masses. However, *Example A* provides an interesting wrinkle as it notes the actions of a small and innovative subsidiary of a bank, operating within a broad and competitive industry. Thus, given alternatives and competitive forces, the individual's encounter with the bank might prove to be a one time and isolated event, which does not feature a substantial power imbalance.[50] In such a case, the justification for applying anti-discrimination policy is substantially decreased. However, applying regulation to medium-size insurance firms (Example B) could be easier to justify.

A final caveat is due here; the noted apparent competitive environment might, in fact, be concentrated in a specific, yet relevant sense. Even though a variety of firms are offering credit services, it is possible that they are applying the same predictive algorithms, provided by the same firms, which feature the same flaws. When a specific software support system dominates the market, discriminatory practices might easily be considered to be demeaning.

The theoretical discussion presented thus far can have several implications. It can clarify in which instances anti-discrimination norms and laws are called for. It can also provide insights as to the appropriate remedies which should be set in place to enforce them. Generally, the law can provide two forms of remedies while taking a regulatory or a tort-based approach. A regulatory approach will single out specific instances of unacceptable discrimination, move to prohibit these practices, and require firms to cease such actions, when apparent. A potential shortcoming of this option is that it does not generate substantial incentives for firms and their executives to strive to minimize discriminatory outcomes, ex ante, but only after the fact. As long as their actions could be reasonably justified, such firms need not actively scrutinize their actions out of fear that discriminatory outcomes would lead to liability.[51]

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[50] *See* Carina Fourie, *Anti-discriminatory Informal Norms*, *in* THE ROUTLEDGE HANDBOOK OF THE ETHICS OF DISCRIMINATION 426-27 (Kasper Lippert-Rasmussen ed., 2017) (explaining that scholars do not find such instances to justify anti-discrimination policy).

[51] Note, however, that even though this legal path might not entail the imposition of damages, it can certainly generate substantial losses to a firm found to be discriminating. These might result from the costs of regulatory scrutiny and after the fact compliance, as well as the reputational damages (which might even lead to consumer boycotts and other sanctions which are easily mobilized in the digital age) that might follow from the

An alternative route would be that of imposing ex post liability (which could lead to the payment of damages) when discriminatory conduct is apparent – similarly to that imposed in general tort law.[52] Such a route would generate strong incentives for firms to engage in ex ante steps to limit their prospective liability.[53] The challenge with applying such liability scheme, however, is the notion of culpability, or lack thereof. A finding of culpability is closely linked to deontological justifications and the "intentional" hook. If the theories (drawn out above) seeking out a culpability "hook" of discriminatory intent fail, imposing such extensive tort liability (and the right to sue for damages) is a challenge. And while tort law certainly does feature strict or absolute liability doctrines (which do not require a finding of culpability), these are applied in specific settings which feature high risks or important policy objectives (such as protecting consumers from defective products).[54] Tort liability without culpability should not be easily expanded to the contexts of anti-discrimination policy, which feature somewhat abstract harms. Therefore, the quest for finding a proper theory of culpability pertaining to the actions of those practicing predictive analytics should also prove crucial for applying stricter tort-like remedies.

Finally, consider the abovementioned deontological argument justifying anti-discrimination policy given the treatment of individuals as mere segments within groups. It is unclear whether this general argument is mitigated or perhaps aggravated by the shift to predictive analytics. Indeed, some individuals might find comfort in the (mostly illusionary) notion that they are merely rejected by a computer, rather

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revelations that such firms indeed engaged in discriminatory conduct. Still, such costs might provide insufficient incentives for motivating substantial ex ante initiatives to block discriminatory outcomes when applying predictive models.

[52] Tarunabh Khaitan, *Indirect Discrimination*, *in* THE ROUTLEDGE HANDBOOK OF THE ETHICS OF DISCRIMINATION 40 (Kasper Lippert-Rasmussen ed., 2017) (explaining the connection between negligence and the tort of discrimination).

[53] Firms might strive to insure against this risk, yet nonetheless the firms will be subjected to the relevant supervision and requirements of the insurance firms regarding these matters.

[54] *See* Jules L. Coleman, *The Morality of Strict Tort Liability*, 18 WM. & MARY L. REV. 259, 268-70 (1976) (explaining that in specific categories the law has introduced exceptions and allowed for collecting damages without finding fault).

than subjected to the insult derived from a human rejection.[55] Others might have a different view. They might find automated grouping and scoring to be highly offensive to the individual's autonomy. The big data and predictive analytics environment, therefore, tends to further complicate the application of this justification, possibly leading to an analytic dead end. However, the predictive analytics context allows for formulating a simple response as to the question regarding this justification's relevance, or lack thereof, to the current discussion (as well as its analytical strength). As noted in the introduction, other fields of theoretical inquiry are currently examining the rise of predictive analytics. One such specific area pertains to autonomy risks brought about by automated and autonomous decisions.[56] It is clear that this noted justification should be disconnected from the "discrimination"-based debate, and applied to this, other academic and policy-based discussion as to the regulation of predictive analytics.

To conclude, predictive analytics present a challenge to the acceptable understanding of intentional discrimination. Therefore, novel and broader forms of culpability must be considered. When found to be relevant they might then be applied to justify protection from specific forms of differentiation as well as the forms of remedies made available to those harmed by the discriminatory acts.

B. *Challenges to the Consequential Arguments - and Quick Responses*

The previous discussion demonstrated that relying on intent-based arguments to justify anti-discrimination policies in predictive analytic environments is proving to be a substantial challenge. Consequentialist arguments prove to be a better fit, at least in some cases and for some theories. Such theories can be applied when the "intentional" hook is absent or difficult to establish. Applying such theories to the predictive analytics context presents specific wrinkles and notable analytical points of their own.

First, consider the justification for intervention to limit stereotyping and stigma for protected groups. A data driven process which has a discriminatory outcome might enhance existing stigma and

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[55] For a presentation of both views, see discussion in Zarsky, *supra* note 7, at 320.

[56] *See* Tal Z. Zarsky, *Incompatible: The GDPR in the Age of Big Data*, 47 SETON HALL L. REV. 995, 1015 (2017); Sandra Wachter, Brent Mittelstadt & Luciano Floridi, *Why a Right to Explanation of Automated Decision-Making Does Not Exist in the General Data Protection Regulation*, 7 INT'L DATA PRIVACY L. 76, 97 (2017).

stereotypes regarding protected groups. Generally, such stigma might have substantial adverse effects on the social group, both internally and externally. It affects the way group members are viewed by others and how these members consider themselves. The strengthening of an existing stereotype in one context often impacts the way group members are treated in other social settings. Furthermore, it also directly affects the way group members evaluate themselves, at times lowering their aspirations and productivity.[57]

A process's automated nature might arguably exacerbate this concern. To explain and demonstrate, let us return to the noted examples. Here, when the automated system indicates differential treatment towards a minority group given existing patterns and correlations, the public will perceive such a finding as one that strengthens negative prejudice regarding this group. The automated nature of the process might, in fact, further enhance this perception. The public will, most likely, not discount this finding and the process applied in its wake as to be one that is premised on bigotry and existing biases (as indeed might be the case). Given its automated nature, the public will rather consider it to result from pure mathematical reasoning, thus lending it further credence.

For instance, in the context of credit (Example A), a finding that a specific minority is provided with a poor credit rating will enhance stereotypes of poor social standing and spill over into other contexts. Furthermore, the context of insurance (Example B) features similar problems, as those within groups considered to be "riskier" might be stigmatized in other contexts outside that of health and life insurance. Beyond these examples, other situations might generate this concern, and therefore, might require novel legal responses (even though they are not addressed in current law or backed by other theories). For instance, predictive analytics tools are at times used for tailoring advertising and marketing. The economic implications of slightly marking up prices for chosen products to a specific group and providing said group with some ads rather than others might be benign. However, the symbolic impact could be substantial. Therefore, discriminatory outcomes in this retail-related context should be prohibited as well in accordance to this justification.

A possible mitigating factor which might limit the relevance of this justification to the context at hand would be the process's inherent opacity, and the fact that its discriminatory outcome (and thus the stigmatizing elements derived from it) would be evident only after

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[57] Alexander, *supra* note 23, at 162.

further study and inspection. However, the discriminatory nature of automated processes is constantly being revealed and in a variety of contexts.[58] Therefore, this opacity element might not prove mitigating after all.

The strength of the stereotyping/stigma justification depends on the relevant context. As noted, stereotyping requires existing salience of the group and the noted traits as well as visibility of the discriminatory practice. This clearly transpires when discriminatory outcomes flow from the actions of the government or major private parties. Yet what of the examples noted, in which relatively small or medium-size private parties generate discriminatory outcomes while applying predictive analytics? The general argument, according to which anti-discrimination policy requires a power-based relationship,[59] has some merit in this context, and therefore, in specific circumstances, the noted stigma-based justification need not hold. The linkage between the size and influence of the entity and the noted stigma concern could be articulated as follows: for a stigma to spread and cause real damage, the entity asserting the stigmatizing position needs to be of substantial social standing and dominance as it must prove to have some influence in a public debate. Small startups applying exploratory models can hardly be considered to meet this criterion, and the effect of their stigmatizing conduct would prove negligible. Therefore, and generally speaking, this stereotype-based justification must call for excluding such small firms from anti-discrimination policy.

As noted in the previous discussion regarding intent,[60] several caveats are called for. First, if an abundance of small entities are applying the same software tools and generating similar outcomes, a stigma might indeed stick, and the prohibition of the practices is justified. Second, even private firms can substantially promote stereotypes regardless of their size – for instance, firms carrying out crucial social roles. Consider again *Example B* and the context of insurance. Insurance markets are highly regulated and perform the crucial social role of spreading risk. The actions of these firms can

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[58] For a discussion of this phenomenon in the governmental context, see Tal Z. Zarsky, *Transparent Predictions*, 2013 U. ILL. L. REV. 1503, 1514, 1567 (2013). *See also* Yochai Benkler, *A Free Irresponsible Press: Wikileaks and the Battle Over the Soul of the Networked Fourth Estate*, 46 HARV. C.R.-C.L. L. REV. 311, 350 (2011).

[59] *See* Hellman, *supra* note 20.

[60] *See* Alexander, *supra* note 23, at 159; SCHAUER, *supra* note 26.

potentially generate and enhance negative stigma given the salience of their voice. In addition, their actions might be considered to reflect public opinion, regardless of the relevant firm's size. For that reason, anti-discrimination policy could be justifiably expanded to the situations noted in *Example B*.

Next, consider another central consequentialist-based anti-discrimination justification: the notion of seclusion/exclusion and subordination. Here, discriminatory outcomes might lead to the removal and segregation of specific groups from society – a fear especially potent with groups which have suffered such removal or subordination in the past.[61] This concern might snowball into other social crises such as social disengagement, lack of trust, and eventually greater inequality.[62] The strength of this argument does not seem to be affected by the shift to the realm of algorithmic predictions – as it focuses on actual outcomes rather than the process they entail.

This latter justification's central shortcoming is its limited relevance. Very few forms of discrimination can be truly considered to contribute to the structuring of society. Employment, housing, and credit are solid examples of decisions where this concern is valid – whether decisions are carried by human or machine. However, one might nonetheless question whether *Example A* features a situation in which policy intervention is justified according to this theory. On the one hand, it discusses the allocation of credit, yet on the other, FinBank is merely one of several relevant entities. Here again carve outs and exemptions for smaller firms might be justified. Furthermore, the noted *Example B*, also does not seem to provide a good fit for applying the noted justification, as insurance (or lack thereof) does not necessarily have a structural effect on society (although if hard pressed, an argument as to the broader role insurance actually has could be proposed).[63]

C. *Beyond "Salient Social Groups"*

Predictive analytics can generate endless options and variations of social groupings for potential differentiation. For instance, these can be

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[61] SCHAUER, *supra* note 26, at 189; *See also* Richard Primus, *The Future of Disparate Impact*, 108 MICH. L. REV. 1341, 1347 (2010).

[62] *See* Zarsky, *supra* note 14, at 1399.

[63] For instance, that the lack of insurance inhibits the ability to participate in some social practices or take risks.

premised on the individuals' shopping habits, reading interests and sleeping schedules. In doing so, they might rely on an abundance of factors and the interactions between them. Should any of these new possible forms of social group be prohibited in accordance to the existing anti-discrimination justifications (yet not necessarily doctrine)? This last segment briefly addresses this cutting edge and vexing question. Note, however, these forms of sorting might nonetheless be found normatively unacceptable according to other theories, including that of equality, which will not be discussed here.

As noted, the key prerequisite for the consideration of a specific distinction as part of anti-discrimination theory is that it pertains to a "salient social group." This foundational element is the key to the various justifications noted. As explained above, defining such "groups" could be done in accordance with either an objective or subjective theory.[64]

It is questionable whether the rise of predictive analytics will substantially change the subjective view of salient social groups. Indeed, novel differentiating factors could be introduced, but these will not necessarily impact the way an individual views and categorizes him- or herself. There are, however, several parameters which individuals might find central for their self-definition and identity structure, which were not usually applied as factors for differentiation in allocation up until recently, due to lack of interest, ability, or sufficient data. For instance, note the facts of *Example B*, which features an insurance company relying on veganism as a discriminating factor; an element which usually is not central to discrimination-based discussions. Yet today, in the age of "Big Data," novel data collection techniques might enable establishing the veganism factor (such as through consumption records) and applying it in various contexts to differentiate among individuals. It is fair to assume that this personal parameter might be central to an individual's self-definition.[65] Therefore, the law must be open to introducing additional elements into the list of "social group," that should be part of anti-discrimination policy, as discriminating on their basis might prove both demeaning and stigmatizing – the two leading justifications noted above.

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[64] *See* Stoljar, *supra* note 16; Lippert-Rasmussen, *supra* note 17; Thomsen, *supra* note 18; Shin, *supra* note 19; Hellman, *supra* note 20.

[65] For a discussion of the centrality of veganism to one's identity, see Elizabeth Cherry, *Veganism as a Cultural Movement: A Relational Approach*, 5 SOC. MOVEMENT STUD. 155, 155-56 (2006).

Yet there are limits to the expansion of the extent of the concept of salient social groups. To demonstrate, consider again *Example B* which also noted discrimination on the basis of sleeping habits. While gathering information regarding this parameter is now possible (for instance through various wearables, or indications of cell phone usage or movement), it cannot be considered central to the individual's self-determination. Therefore, discrimination on the basis of this factor should not be considered as part of the anti-discrimination debate.[66]

Finally, consider the alternative perspective for defining salient social groups (which might be subjected to discrimination) – through an analysis of the objective view of salient social trends. The human ability and tendency to group individuals together might be on the verge of substantial change. The age of predictive analytics will most likely impact the way humans perceive the world. As opposed to one that is broken down along the crude lines of race, gender, age, religions, etc., it would be one that provides for far more nuanced distinctions, which rely on new salient parameters.

Is it reasonable to argue that cognitive methods developed over thousands of years will quickly change given the availability of new technological measures? Several studies and news articles have indicated how the use of Google has affected the way we think and use our brains, especially with regard to how and what we remember.[67] It is therefore not far-fetched to hypothesize that the availability of novel sorting methods will, over time, indeed change the way people sort and differentiate – and thus consider social groupings.

The noted change in social sorting might lead to vast advantages, as society will prove more innovative and agile in the way it grasps potential allocations. Yet, there might also be a downside; society will consider applying new forms of systematic discrimination, which will now prove extremely harmful given the various psychological and sociological dynamics addressed throughout this Essay. Therefore, policy and lawmakers must constantly track new social trends, and if

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[66] For a similar discussion, see Kasper Lippert-Rasmussen, *Private Discrimination: A Prioritarian, Desert-Accommodating Account*, 43 SAN DIEGO L. REV. 817, 824, 856 (2006) (explaining that having green eyes is irrelevant in almost any social context and thus, should be considered as the basis of unacceptable discrimination, as opposed to religion or sex).

[67] Alexis Sobel, *How Google is Changing the Way We Think*, HUFFINGTON POST, (Aug. 25, 2015, 12:48 PM), http://www.huffingtonpost.com/entry/google-changes-thinking_us_55dc8069e4b04ae497046fa6 [https://perma.cc/S4HF-DMKS]; Stephanie Thomson, *Scientists Say Google is Changing Our Brains*, WORLD ECON. F. (Oct. 6, 2016), https://www.weforum.org/agenda/2016/10/how-google-is-changing-our- brains/ [https://perma.cc/X4FC-HFWQ].

indeed these new forms of thinking arise, consider appropriate amendments to the foundations of anti-discrimination policy so to reflect the protection of these novel groups and social sub-cultures from these new forms of sorting.

IV. CONCLUSION

This Essay discussed the application of justifications for anti-discrimination policy to the age of data analytics. The analysis examined central theories and the changes the new environments bring about. This Essay presented three central findings, which are highly relevant to firms engaged in the implementation of predictive analytics in contexts that substantially impact individuals lives – and calls for at least considering relevant measures:

(1) In terms of deontological theories – the notion of "intent" and "culpability" requires some tinkering and adaptation. When such intent could be found in the predictive analytics context along the lines noted, a justification based on the "demeaning" nature of the discriminatory conduct could be applied and anti-discrimination policies must be introduced and enforced with rigor.

(2) In terms of consequentialist theories – stigma-based theories can justify legal intervention in specific instances in which negative stereotypes will have a substantial effect – especially when referring to groups already discriminated against and applied by entities of prominence.

(3) In terms of defining new social groups, which might be subjected to discrimination given the rise of novel processes, we must consider adding distinctions which relate to important factors individuals rely upon to define themselves, to the existing list of protected groups. We must also track possible changes in human cognition that the reliance of predictive analytics might bring about and their possible effects, which might lead to adding new sub-categories to anti-discrimination policy.

Discrimination is a loaded concept. While it is intuitively often mentioned in discussions and debates pertaining to predictive analytics, examining it thoroughly in this novel context requires substantial legwork. This Essay strives to provide an initial blueprint for applying the vast scholarship dedicated to understanding discrimination to this novel technological and social setting of "predictive analytics." Yet, this Essay is merely a work in progress. As the practices evolve and technology proceeds, additional layers of analysis must follow – a process which must involve technologists, philosophers, and legal scholars.